MP-25 MILITARY MANPACK TRANSCEIVER

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Kachina
Communications, Inc.

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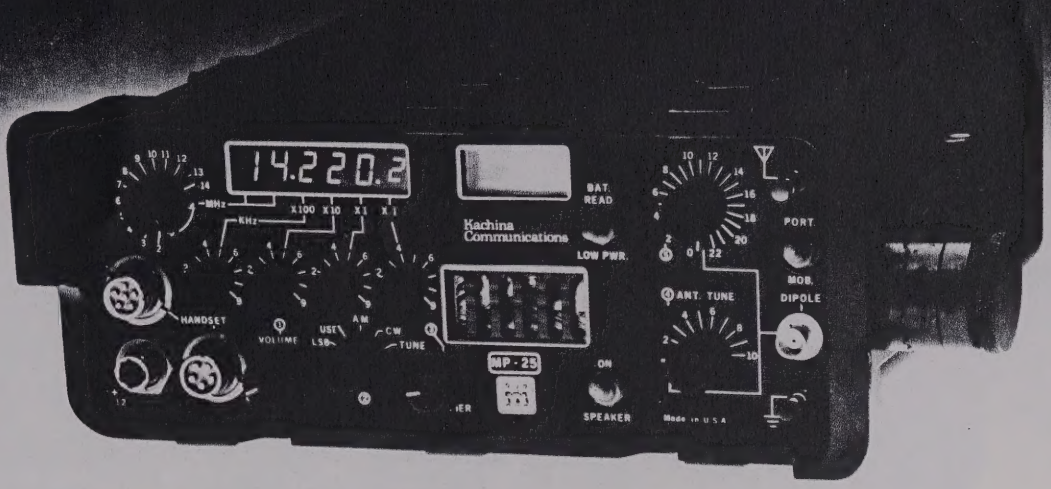
TWX (Telex II): 910 972 0902 Tel. 602/282-4837



INTRODUCTION

The MP-25, 25 watt SSB Synthesized Manpack Transceiver covers the 2-15 MHz frequency range in 100 Hz steps. This lightweight, immersible transceiver features a built-in antenna tuner and speaker. Meets MIL-STD-108.

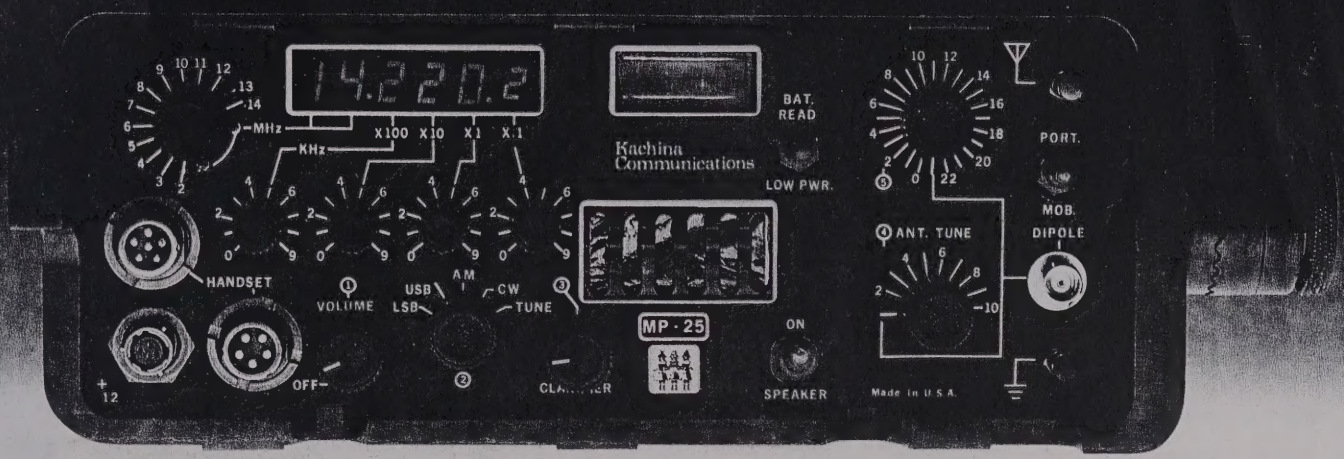
APPLICATION

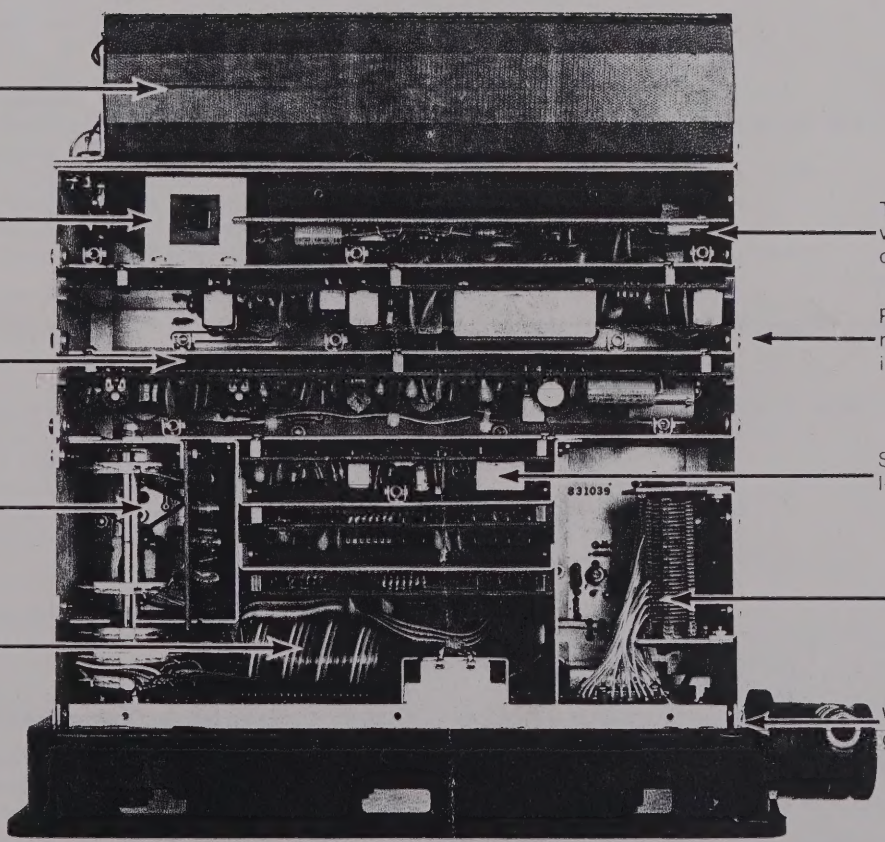
The Kachina MP-25 Transceiver is intended primarily for tactical military and defense communications, although its rugged construction and ability to be used under extreme conditions make it attractive to industrial users as well. When operated with the optional battery pack (nickel cadmium or lead acid), collapsible whip antenna and carrying bag, the MP-25 is a completely portable manpack. An optional mobile mounting bracket and provision to operate from the 12 V DC vehicle battery allows mobile operation. An optional power supply/charger and longwire/dipole antenna provide base station capability.

CONSTRUCTION

The MP-25 Transceiver chassis is constructed of rugged iridited aluminum, reinforced with aluminum crossmembers. These crossmembers provide structural support, and also serve as RF shielding. The drawn aluminum case is of one-piece design reducing the chance of water ingress. Both the case and the front panel controls are water tight, allowing the MP-25 to be submerged to depths of up to 1 m. Printed circuit boards are covered with an anti-fungicidal, fire retardant coating. Six of these seven modules plug into a central mother board, and the seventh, the program display module, quickly disconnects for simplified maintenance. The front panel is constructed of unbreakable Lexan® plastic.

The MP-25 is Made in the U.S.A.





Choice of rechargeable battery packs, lead-acid or ni-cad.

Resettable circuit breaker, replaces easily lost fuses.

Printed circuit modules plug-in to main or "mother" board.

Modular construction. Entire low pass filter or antenna tuner sections may be replaced as a unit in minutes.

Ribbon connector to easily removeable LED frequency display.

Transmitter module provides 25 watts PEP power output.

Rugged iridited aluminum chassis and shielding.

State-of-the-art single loop synthesizer section.

Built-in antenna tuner.

Watertight sealing gaskets.

Top view, with watertight case and top cover removed.

SPECIFICATIONS

General

Power Source: Internal 12 volt rechargeable batteries or external 12 volt supply, negative ground only.
Frequency Range: 2,000.0 - 14,999.9 kHz in 100 Hz steps.
Modes: A3J (USB & LSB), A1 (CW), A3H (compatible AM), F1 (FSK).
Operating Temperature Range: -30°C to +55°C.
Waterproofing: Immersion to 1 meter (20°C).
Size (W x D x H): With internal battery pack - 29 x 33 x 11.68 cm (11.3 x 13 x 4.55 in.)
With external battery pack - 29 x 34.8 x 11.68 cm (11.3 x 13.7 x 4.55 in.)
Weight, without batteries: 4.3 kg (9.6 lbs.)
Weight, with sealed lead acid battery pack: With internal 6 Ah battery pack - 6.86 kg (15.2 lbs.)
With external 6 Ah battery pack - 7.30 kg (16.1 lbs.)
Weight, with nickel cadmium battery pack: With internal 4 Ah battery pack - 5.94 kg (13.2 lbs.)
With external 7 Ah battery pack - 7.37 kg (16.2 lbs.)
Metering: Relative received signal strength, relative transmitter power output, reflected power (tune mode), battery voltage.
Antenna Tuner: Built-in. Capable of matching to whip or longwire antennas from 2 - 150 meters in length. Special provision to match mobile antenna.
Lighting: Spring loaded switch activates readout display for approximately 10 seconds. Meter illuminated while switch held on. Meter illuminated when mode switch in TUNE position.
Memory: Frequency change may be entered only when readout display is illuminated. Last four digits of second frequency may be switch programmed in readiness for a change. Will not activate until READ switch is activated.
Out-of-Lock Indicator: Audio tone warns if synthesizer out-of-lock, such as when large changes in frequency are made or battery needs charging.

Receiver (at 12.6 VDC)

Signal to Noise: Better than 10dB for .5uV input signal.
Selectivity: Greater than 2.4 kHz at -6 dB. Less than 5 kHz at -60 dB.
Sensitivity: More than .125 watts output for .5uV input signal.
AGC: Less than 10dB variation in audio output from 5uV to .01V input signal.
IF Rejection: 2 - 9.9 MHz Better than -90dB.
9.9 - 15 MHz Better than -60dB
Image Rejection: Better than -90dB
Internal Spurious Signals: Not greater than the equivalent of .5uV except at 5 MHz = 3uV.
Audio Output: 1 watt minimum with not more than 10% distortion.
Clarifier: ± 50 Hz. minimum.
Current Drain (readout display off, volume low): Typically 170mA.
Current Drain (readout display on, volume low): Typically 200mA.
Current Drain (readout display off, volume normal listening level): Typically 185mA.

Transmitter (at 12.6 VDC)

Power Output: SSB. 25W P-P average 20W minimum (6 watts with selector switch in "LOW" position).
CW. 10W (internally adjustable).
AM. 6W (carrier).
Intermodulation distortion: Not less than -26dB at 20 watts. Typically -30dB at 25 watts.
Spurious output: -50dB with reference to 25W level.
Sideband Suppression: Better than -50dB.
Harmonic Suppression (50 ohm output): -40dB.
Carrier Suppression: -40dB minimum.
Frequency Stability: ± 100 Hz from -10°C to +50°C
± 150 Hz from -30°C to +55°C.
ALC: Limits output power to within 1dB of setting
Current Drain: Average voice 1 - 2 amps.
CW (Key down) 4 amps
CW (Average) 1 - 2 amps.
AM 1.5 amps.
Microphone: H-250/U or equivalent.

All specifications are subject to change without notice. Detailed environmental specifications available upon request.

REV. 10/84

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FEATURES

Modern Single Loop Synthesizer Design - Latest state-of-the-art single loop synthesizer covers 2-14.999 MHz in 100 Hz steps, resulting in vastly simplified circuitry over older designs. This up-conversion superheterodyne system uses a 16 MHz IF frequency.

Light, Compact Package - Weighs only 5.94 kg with internal ni-cad battery pack, 4.29 kg without battery. Measures only 29x33x11.68 cm.

Built-in Antenna Tuner - Allows the MP-25 to match any antenna greater than 2 meters in length over the entire 2-15 MHz range. Special provision has also been made to allow the transceiver to operate with antennas of less than 50 ohms impedance, such as used in mobile installations.

Modular Construction - Allows printed circuit modules to be unplugged and replaced in seconds. Front panel hinges down for simplified maintenance.

Multi Mode Operation - USB, LSB, Compatible AM, semi break-in CW, FSK.

Transmitter - 25 watts PEP and average power output with high/low power selector switch in the "high" position, typically 6 watts in the "low" position. Transmitter features include SWR bridge, automatic level control, 6 watt "tune" signal.

Receiver - Provides 1 watt audio output with not more than 10% distortion. Features fast attack, slow release AGC system.

Choice of Internal or External Battery Packs - Internal battery pack ideal when weight and size are critical. External design offers larger battery capacity and ability to change battery without removing transceiver from case.

Choice of Ni-Cad or Sealed Lead Acid Batteries - Both types are rechargeable and available in either external or internal designs. Batteries are easily replaced without need to solder connections.

Convenient Front Panel Controls - All operator adjustments are located on the front panel. Panel mounted meter reads relative signal strength, relative power output, battery voltage and SWR nul indication.

LED Frequency Display - The operating frequency is displayed on the front panel by large orange-red light emitting diodes. These LED's and the meter light are actuated by a toggle switch and turn off automatically after approximately 10 seconds, to conserve battery power.

High Low Power Selector - This switch, located on the front panel, allows the operator to conserve batteries when operating at close ranges.

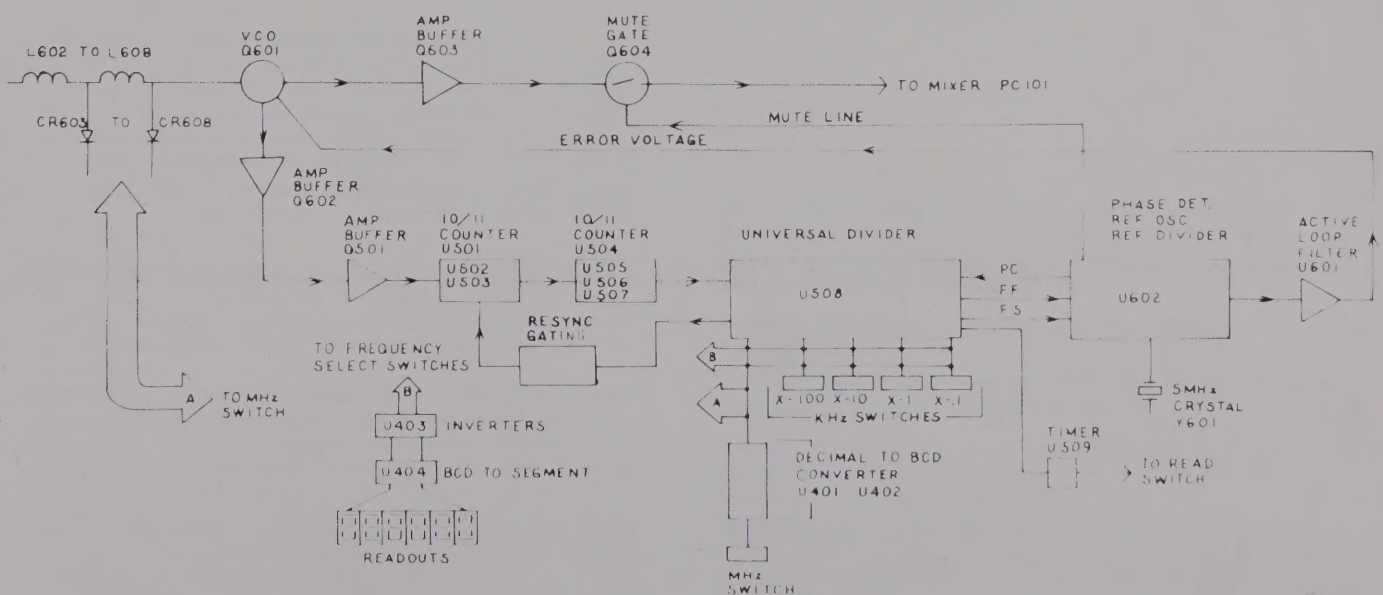
Internal Speaker - Speaker may be turned on/off via front panel selector switch. Voice and CW sidetone available through handset, CW sidetone through speaker.

Resettable Circuit Breaker Switch - Eliminates need for spare fuses. The circuit breaker is tripped in the event of overload or short circuit.

Rotating Antenna Base - Allows whip antenna to be adjusted to any angle in relation to transceiver.

Mobile Mounting - Rugged mobile mounting bracket (optional) attaches directly to transceiver case. Designed for use under most severe conditions.

Audible Alarm - Sounds when battery pack needs recharging or synthesizer is out-of-lock.



Block diagram of the MP-25's modern single loop synthesizer section.

The synthesizer provides 100 Hz channel spacing

ACCESSORIES

a. **MP-25-HS Handset** - H-250/U miniature military handset. Fully waterproof. Dynamic, 150 ohm impedance. Push-to-talk. Weight .27 kg.

b. **MP-25-AW Folding Whip Antenna** - May be stored in transceiver carrying bag. Connects automatically when fitted to transceiver. Antenna may be rotated to any angle with respect to transceiver and locked in place. Constructed of fiberglass tubing, allowing antenna to be extremely lightweight and resilient. Weight .39 kg.

c. **MP-25-AD Dipole Antenna** - Supplied complete with carrying bag (carrying bag can also be used for spare battery pack). Weight 1.3 kg.

d. **MP-25-BP Battery Pack** - 12 volt rechargeable bettery in a protective aluminum holder. Clips on to rear of transceiver. Available in choice of sealed lead acid or nickel cadmium, internal or external designs. See specifications for weights.

e. **MP-25-CB Transceiver Carrying Bag** - Made of olive drab nylon, the bag not only protects the transceiver, but also provides pockets for various accessories such as the handset and folded whip antenna. Fitted with adjustable padded straps. Weight .63 kg.

f. **MP-25-MB Mobile Mounting Bracket** - Heavy duty type clamps around body of transceiver, allowing a strong attachment to the vehicle. Weight 1.12 kg.

g. **MP-25-PSC Power Supply/Charger** - Front panel switch converts this base station power supply to a battery charger allowing the battery to be charged while inside the transceiver. Operates from 110 or 220VAC, 50 or 60 Hz. A fuse and current limiting cutout protect the power supply against short circuits. The supply is electronically regulated and circuit limited, and the output is over-voltage protected. Contains built-in loud speaker for base station operation of MP-25 Transceiver. Weight 3.65 kg.

h. **MP-25-HG Hand Generator** - Designed to operate the MP-25 Transceiver and simultaneously charge the batteries. Weight 2.0 kg. 790.00

Also available (not pictured):

MP-25-CW Telegraph Key - May be positioned on sender's knee or operated on table or other surface. Weight .48 kg.

KC-M-AW1 Mobile Whip Antenna - Stainless steel approximately 2.5 meters long. Weight .38 kg.

KC-M-BL Ball Mount - For KC-M-AW1 Mobile Whip Antenna. Weight .67 kg.

KC-M-S2 Heavy Duty Spring - For use with KC-M-AW1 Mobile Whip Antenna. Weight 1.35 kg.

KC-SP-1 Solar Power Unit - Allows transceiver batteries to be charged from the sun. Fitted with meter so that collector may be positioned for maximum charge.

MP-25-CH Battery Charger - Allows the simultaneous charging of up to 4 battery packs, either sealed lead acid or nickel cadmium. Will operate from 110/220 VAC, 50 or 60 Hz.

MP-25-MC-Hand Microphone - M-80/U, dynamic type microphone. Used when transceiver is operated with power supply speaker in base station operation. Weight .39 kg.

PN980013 Extender Board Kit - A set of extender boards to allow printed circuit modules to be extended above the transceiver for maintenance and service. Weight .19 kg.

PN980014 Mobile Connecting Power Lead - Allows the transceiver to be operated from vehicle battery. Weight .33 kg.